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EXAMINER

CHU, KIM KWOK

ART UNIT	PAPER NUMBER
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2627

MAIL DATE	DELIVERY MODE
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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/598,974

Applicant(s)

EHREKE ET AL.

Examiner

Kim-Kwok CHU

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amendment filed on January 5, 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 18-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-12, 18 and 20-22 is/are allowed.
- 6) ☒ Claim(s) 1, 19, 23-25, 27-30, 32 and 33 is/are rejected.
- 7) ☒ Claim(s) 26 and 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/15/2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of Filing/Refusal Cited (PTO-502)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

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Improper Dependent Claims

1. New Claims 23-31 are objected to under 37 CFR 1.75(c) as being in improper form because the original claims 23 and 24 filed on June 11, 2007 have not been cancelled. Accordingly, the new claims 23-31 have been renumbered as 25-33 respectively.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

*A person shall be entitled to a patent unless --
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.*

3. Claims 1, 19, 23-25, 27-30, 32 and 33 are rejected under 35 U.S.C. § 102(b) as being anticipated by Grot et al. (U.S. Patent 6,005,691).

4. Grot teaches a data carrier having all of the structures as recited in claim 1. Grot teaches the following:

Regarding Claim 1, the carrier 100 (Figs. 3A and 3; column 4, lines 1 and 2) having a holographic data memory 103 (Figs. 3A and 4A; column 4, line 3) in a form of a volume hologram (Fig. 3A; DOE 103 generates volume hologram; a hologram is a 3D/multiplex recording) comprising: a core layer 113 comprising

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the holographic data memory (DOE; column 4, line 3) in hologram (Fig. 3A); and an adjacent layer 109 (Fig. 3B) laminated to the core layer 113, the adjacent layer 109 having an inner surface (Fig. 3B; inner surface next to 113), the inner surface facing the core layer 113 and having includes a roughness (grating shape unevenness) before lamination to the core layer 113 that causes a wavelength shift (inherent feature where a grating/unevenness surface causes wavelength shift) of the image 103 that is reconstructed (read) from the volume hologram (image 103 is seen with light shifted).

5. Claims 25 and 27-29 have limitations similar to those treated in the above rejection, and is met by the references as discussed above. Claim 27, however also recites the following limitations as taught by the prior art of Grot et al. For example:

Regarding Claim 27, the adjacent layer 109 (Fig. 3A) includes a first area (edges) having a first roughness profile (vertical) and a second area (horizontal) having a second roughness profile, wherein the first roughness profile is different from the second roughness profile (Fig. 3B; grating has a roughness shape of two different directions)

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Regarding Claim 28, the adjacent layer 109 comprises at least one thermoplastic plastic material (Fig. 3B; layer 109 is made of plastic).

Regarding Claim 29, the thermoplastic plastic material includes polycarbonate (PC) (Fig. 3B; column 3, lines 25 and 26; polycarbonate is a plastic material).

6. Method claims 19, 23, 24 30, 32 and 33 are drawn to the method of using the corresponding apparatus claimed in claim 1. Therefore method claims 19 and 30 corresponds to apparatus claim 1 and are rejected for the same reasons of anticipation as used above. Claims 23, 24, 32 and 33, however also recites the following limitations as taught by the prior art of Grot et al.

Regarding Claims 23 and 24, selecting a smoothing area (vertical/horizontal) areas of adjacent surface represents numbers, letters, geometric forms shapes or images (roughness displays a grating shape).

Regarding Claim 32, an increased characterized in roughness of the directly adjacent layer corresponds to an increased causes a shift of the wavelength of the image reconstructed image to shorter wavelength.

Regarding Claim 33, a regular relief is impressed onto a

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selected area of the adjacent 109 through at least one of thermal and mechanical deformation (Fig. 3B).

Allowable Subject Matter

7. Claims 2-12, 18 and 20-22 are allowable over prior art.

8. Claims 26 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is an Examiner's statement of reasons for the indication of allowable subject matter:

As in claims 2, 20, 26 and 31, the prior art of record fails to teach or fairly suggest a data carrier having following feature:

the data having an adjacent layer characterized the average roughness of the inner surface is about 5 μm to 25 μm so as to result in a wavelength shift of about 20 nm.

The features indicated above, in combination with the other elements of the claims, are not anticipated by, nor made obvious over, the prior art of record.

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Related Prior Art

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bjorklund et al. (4,458,345) is pertinent because Bjorklund teaches a volume holographic storage means having a single recording layer.

Rich et al. (6,998,196) is pertinent because Rich teaches a volume holographic storage means having a DOE layer.

Response to Remarks

11. Applicant's Remarks filed on January 5, 2011 and February 25, 2011 have been fully considered.

With respect to the feature of "in a form of volume hologram" (Claim 1, line 2). Applicant disagrees that the prior art of Grot et al. (U.S. Patent 6,005,691) teaches a "volume hologram". Applicant states that the prior art of Grot teaches a surface hologram or surface relief hologram where holographic image is produced by the diffraction of light at the topological features 111 of the contoured surface 113 (page 5 of the Remarks, lines 10-13). In this case, the term "surface relief hologram" means a hologram which is embossed on the surface of a card type material as explained in column 1, lines 45-55 by Applicant's referred prior art of Curtis (U.S. Patent

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6,695,213). However, the prior art of Grot's contoured surface 113 laid out on the surface of a card type material does not means it can not store data in form of a volume hologram. In fact, Grot's diffractive grating (DOE) 11/103 (Figs. 1A and 3A) formed in the surface 13/113 (Figs. 1B and 3B) of the hologram-containing card 1 is used to created volume hologram. For example, a reference of Rich et al. (U.S. Patent 6,998,196) teaches that a similar DOE 102 (column 10, lines 60-62) as illustrated in Figs. 6D and 6E is used to generates volume hologram (column 10, lines 4-11).

With respect to the meaning of "laminated (Claim 1, line 4), Applicant argues that the contoured surface 113 is not laminated to a substrate 109 (page 6 of the Remarks, last paragraph, lines 1 and 2). According to dictionary's definition, the word "laminated" has several meanings. One of them is to form a thin plate or to separated into a thin plate. In this case, the prior art of Grot's 113 and 109 are two different plates and therefore they can be described as being laminated in form of two different layers as illustrated in Fig., 3B.

In addition, Applicant does not agree that the prior art of Grot teaches the Claim feature "the inner surface facing the core layer and having a roughness before lamination to the core

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layer that causes a wavelength shift of the image reconstruction from the volume hologram (page 7 of the Remarks, second paragraph). In this case, the prior art of Grot's layer 109 has a rough (uneven) surface facing layer 113 (Fig. 3B). Since the layer 109 does not has a smooth surface, a light beam passing through the rough surface layer 109 with uneven thickness causes the wavelength of the light beam varies and therefore its wavelength is shifted.

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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13. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Kim CHU whose telephone number is (571) 272-7585 between 9:30 am to 6:00 pm, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Nguyen, can be reached on (571) 272-7579.

The fax number for the organization where this application or proceeding is assigned is (571) 273-8300

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished application is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9191 (toll free).

/Kim-Kwok CHU/

Examiner AU2627
March 4, 2011
(571) 272-7585

/William J. Klimowicz/

Primary Examiner, Art Unit 2627